

Comparison of A*, LPA*, D* Lite

1. *Mazes.*

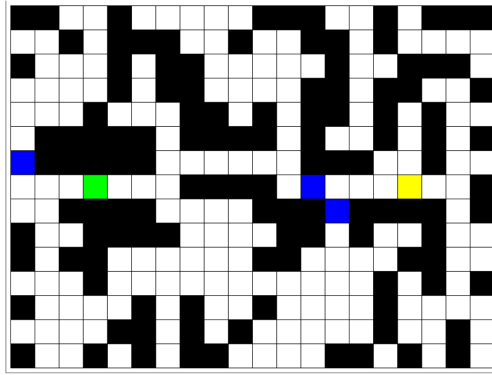


Figure 1: Sample 8-connected maze [$p = q = r = 1$]

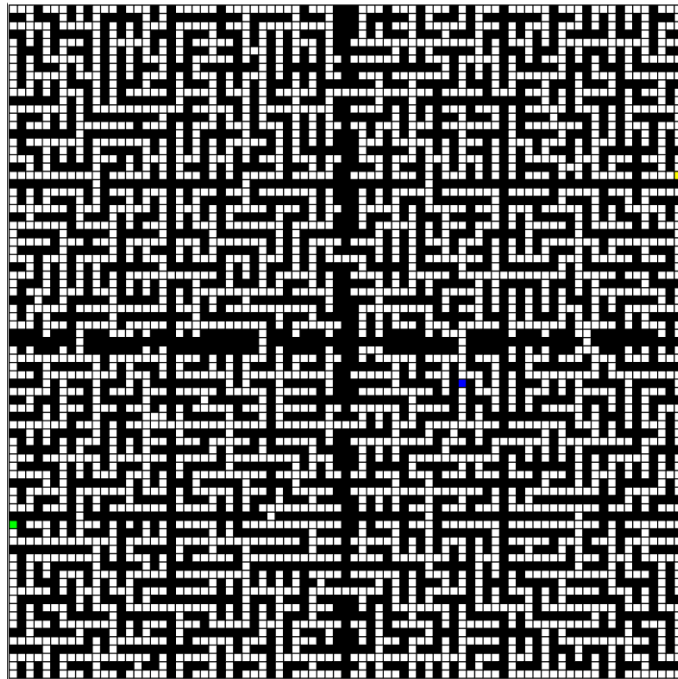


Figure 2: Sample 4-connected maze [$p = 4, q = 2$]

2. Performance of D^* Lite and “dynamic” A^* .

Table 1: Results for solving the 8-connected maze 1

Algorithm	Heuristic	Path 1	Path 2	Path 3	Total Extractions
A^*	None	110	136	79	325
	Diagonal distance	19	81	43	143
D^* Lite	None	136	63	43	242
	Diagonal distance	21	104	20	145

Table 2: Results for solving the 4-connected maze 2

Algorithm	Heuristic	Path 1	Path 2	Total Extractions
A^*	None	3187	3186	6373
	Manhattan distance	2783	1996	4779
	way-point Manhattan	2243	1512	3755
	way-point actual distance	1272	908	2180
D^* Lite	None	3061	637	3698
	Manhattan distance	1926	546	2472
	way-point Manhattan	1786	519	2305
	way-point actual distance	563	886	1449

Computing actual distance between way-points took 11029 set extractions with Dijkstra’s algorithm

3. Performance of LPA*.

Table 3: Results for solving the 4-connected maze 2

Algorithm	Heuristic	Path 1	Path 2
A*	None	3187	3186
	Manhattan distance	2783	2848
	way-point Manhattan	2243	2313
	way-point actual distance	1272	1335
LPA*	None	3186	1435
	Manhattan distance	2805	1336
	way-point Manhattan	2270	975
	way-point actual distance	1304	954

Computing actual distance between way-points took 11029 set extractions with Dijkstra's algorithm

4. Graphical solution of mazes.

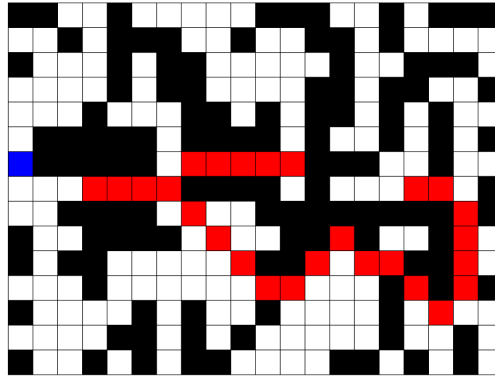


Figure 3: Solution generated by dynamically traversing maze 1

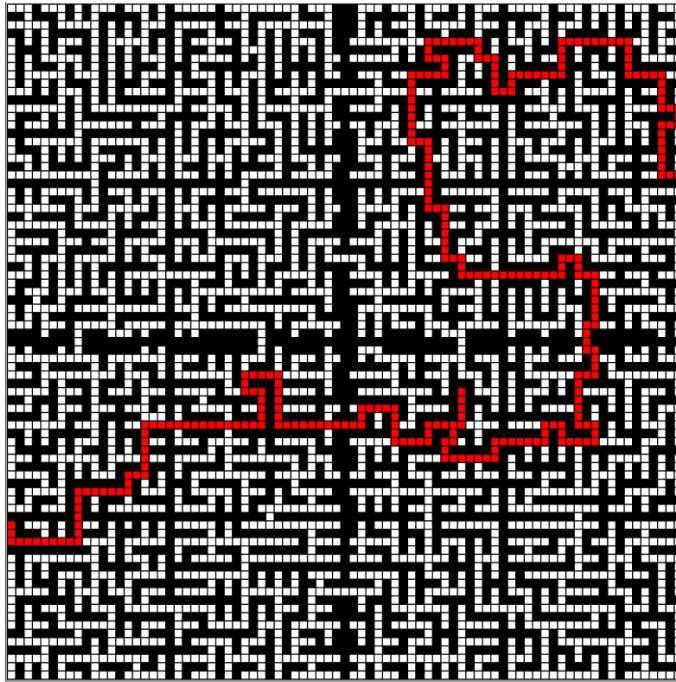


Figure 4: Solution generated by dynamically traversing maze 2

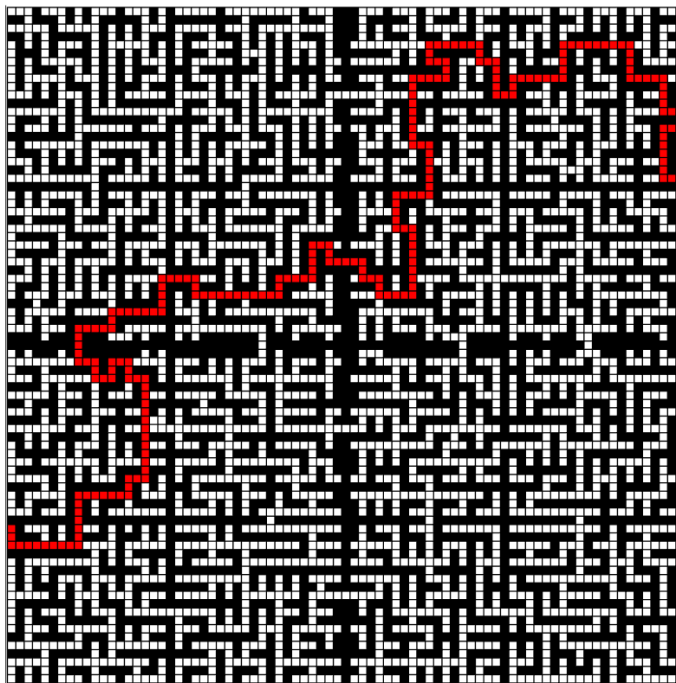


Figure 5: Solution generated by re-solving maze 2